

REMARKS

This amendment is responsive to the Office Action mailed September 20, 2007. Reconsideration and allowance of the claims 1-20 are requested.

The Status of the Claims

The Office Action reports examination of claims 1-20.

Claims 1-3, 6, 13, 14, 17, and 18 stand rejected under 35 U.S.C. § 102(e) as allegedly anticipated by Agilandam et al., U.S. Pat. No. 6,995,559 (hereinafter "Agilandam").

Claims 4, 5, 7-12, 15, 16, 19, and 20 are indicated as containing allowable subject matter.

The Claims Present Patentable Subject Matter

Claims 4, 7, 9, and 11 have been placed into independent form including the limitations of the parent claims. As each of claims 4, 7, 9, and 11 are indicated as containing allowable subject matter, it is respectfully submitted that claims 4, 5, 7, 8, 9, 11, and 12 are now in condition for allowance.

Claim 14 now specifies that the determining means includes at least one of the electromagnetic simulator as set forth in claim 15 and a table as set forth in claim 19. As the subject matter of each of claims 15 and 19 are indicated as being allowable, it is respectfully submitted that claim 14 including the combination of these separately allowable determining means is also in condition for allowance, along with claims 15-20 depending therefrom.

Claim 1 has been amended to specify that the method entails determining a per-slice B_1 field strength value for each slice that is representative of the B_1 field strength over a selected area of the slice, and determining an adjusted per-slice radio frequency excitation intensity for each slice that adjusts the B_1 field strength value for the slice to a selected B_1 field strength value.

Support for these amendments is provided in the original specification at least at page 8 line 5- page 6 line 7 (where the average $|B_1|$ refers to the average B_1 field intensity, for example as plotted in microTesla in Figs. 4 and 5) and at page 10 lines 21-29 (note express use of the term "radio frequency excitation intensity").

Agilandem discloses a technique entailing generating a B_0 map to measure the median B_0 value for each slice (col. 2 lines 43-49) and adjusting the transmitter frequency on a per-slice basis to correct for B_0 inhomogeneity (col. 2 lines 49-56, 63-67). This is based on the relationship $\omega = \gamma \cdot B_0$ (Equation (1) of Agilandem) where γ is the (constant) gyromagnetic ratio, B_0 is the static magnetic field, and ω is the frequency (in radians/sec) of the radio frequency excitation (B_1) field. Since the bandwidth for magnetic resonance excitation is narrow, Equation (1) indicates that inhomogeneity in the static (B_0) magnetic field can result in variations in the excitation frequency ω , which in turn can result in failure to adequately excite magnetic resonance using a single fixed excitation frequency in the case where the static (B_0) magnetic field is nonuniform. See also Agilandem background at col. 1 line 51-col. 2 line 7.

In contrast, claim 1 calls for determining a per-slice B_1 field strength value for each slice, and determining an adjusted per-slice radio frequency excitation intensity for each slice that adjusts the B_1 field strength value. This addresses a different problem from that addressed in Agilandem, namely the problem of B_1 field strength inhomogeneity, for example as may result from subject loading. The subject loading effect is frequency-dependent, as indicated for example in Table 1 of the present application which lists conductivity and permittivity values for a human head model at 298 MHz. The determined per-slice B_1 field strength value may be different for different slices even if the static (B_0) field is perfectly uniform across the slices. In such a case, the method of Agilandem would provide no correction (since the B_0 field is homogeneous in this example) whereas the present application would provide an adjusted radio frequency excitation intensity due to the differences in per-slice B_1 field strength value as determined by modeling or as otherwise determined.

Thus, it is respectfully submitted that claim 1 patentably distinguishes over Agilandem, and that claims 1-3, 6, 10, and 13 are in condition for allowance.

In view of the foregoing, it is respectfully submitted that claims 1-20 present patentable subject matter and meet all other statutory requirements. Applicants therefore respectfully request allowance of claims 1-20.

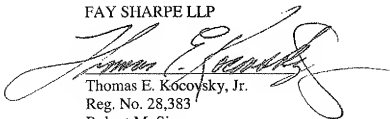
CONCLUSION

For the reasons set forth above, it is submitted that all claims distinguish patentably over the references of record and meet all statutory requirements. An early allowance of claims 1-20 is requested.

In the event the Examiner considers personal contact advantageous to the disposition of this case, she is requested to telephone the undersigned at (216) 861-5582.

Respectfully submitted,

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A handwritten signature in dark ink, appearing to read "Thomas E. Kocovsky, Jr.", is written over a horizontal line.

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